

Department of Energy

§ 431.85

automatic controls; usually shipped in one or more sections and does not include a boiler that is custom designed and field constructed. If the boiler is shipped in more than one section, the sections may be produced by more than one manufacturer, and may be originated or shipped at different times and from more than one location.

Packaged high pressure boiler means a packaged boiler that is:

(1) A steam boiler designed to operate at a steam pressure higher than 15 psi gauge (psig); or

(2) A hot water boiler designed to operate at a water pressure above 160 psig or at a water temperature exceeding 250 °F, or both; or

(3) A boiler that is designed to be capable of supplying either steam or hot water, and designed to operate under the conditions in paragraphs (1) and (2) of this definition.

Packaged low pressure boiler means a packaged boiler that is:

(1) A steam boiler designed to operate at or below a steam pressure of 15 psig; or

(2) A hot water boiler designed to operate at or below a water pressure of 160 psig and a temperature of 250 °F; or

(3) A boiler that is designed to be capable of supplying either steam or hot water, and designed to operate under the conditions in paragraphs (1) and (2) of this definition.

Thermal efficiency for a commercial packaged boiler is determined using test procedures prescribed under § 431.86 and is the ratio of the heat absorbed by the water or the water and steam to the higher heating value in the fuel burned.

[69 FR 61960, Oct. 21, 2004, as amended at 74 FR 36354, July 22, 2009; 76 FR 12503, Mar. 7, 2011]

EFFECTIVE DATE NOTE: At 78 FR 79598, Dec. 31, 2013, § 431.82 was amended by revising the definition of “basic model”, effective Jan. 30, 2014. For the convenience of the user, the revised text is set forth as follows:

§ 431.82 Definitions concerning commercial packaged boilers.

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Basic model means all commercial packaged boilers manufactured by one manufacturer within a single equipment class having the same primary energy source (e.g., gas or

oil) and that have essentially identical electrical, physical and functional characteristics that affect energy efficiency.

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TEST PROCEDURES

§ 431.85 Materials incorporated by reference.

(a) *General.* We incorporate by reference the following standards into subpart E of part 431. The material listed has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Any subsequent amendment to a standard by the standard-setting organization will not affect the DOE regulations unless and until amended by DOE. Material is incorporated as it exists on the date of the approval and a notice of any change in the material will be published in the FEDERAL REGISTER. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Also, this material is available for inspection at U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024, 202-586-2945, or go to: http://www1.eere.energy.gov/buildings/appliance_standards/. Standards can be obtained from the sources listed below.

(b) *HI.* The Gas Appliance Manufacturers Association (GAMA) merged in 2008 with the Air-Conditioning and Refrigeration Institute to become the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). The Hydronics Institute BTS-2000 Testing Standard can be obtained from AHRI. For information on how to obtain this material, contact the Hydronics Institute Section of AHRI, P.O. Box 218, Berkeley Heights, NJ 07922-0218, (866) 408-3831, or go to: http://www.ahrinet.org/Content/OrderaStandard_573.aspx.

(1) The Hydronics Institute Division of GAMA BTS-2000 Testing Standard,

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(“HI BTS–2000, Rev 06.07”), *Method to Determine Efficiency of Commercial Space Heating Boilers*, Second Edition (Rev 06.07), 2007, IBR approved for § 431.86.

(2) [Reserved]

[74 FR 36354, July 22, 2009]

§ 431.86 Uniform test method for the measurement of energy efficiency of commercial packaged boilers.

(a) *Scope.* This section provides test procedures that must be followed for measuring, pursuant to EPCA, the steady state combustion efficiency and thermal efficiency of a gas-fired or oil-fired commercial packaged boiler. These test procedures apply to packaged low pressure boilers that have rated input capacities of 300,000 Btu/h or more and are “commercial packaged boilers,” but do not apply under EPCA to “packaged high pressure boilers.”

(b) *Definitions.* For purposes of this section, the Department incorporates by reference the definitions specified in Section 3.0 of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85), with the exception of the definition for the terms “packaged boiler,” “condensing boilers,” and “packaged low pressure steam” and “hot water boiler.”

(c) *Test Method for Commercial Packaged Boilers—General.* Follow the provisions in this paragraph (c) for all testing of packaged low pressure boilers that are commercial packaged boilers.

(1) *Test Setup—(i) Classifications:* If employing boiler classification, you must classify boilers as given in Section 4.0 of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85).

(ii) *Requirements:* (A) Before March 2, 2012, conduct the combustion efficiency test as given in Section 5.2 (Combustion Efficiency Test) of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85) for all commercial packaged boiler equipment classes.

(B) On or after March 2, 2012, conduct the thermal efficiency test as given in Section 5.1 (Thermal Efficiency Test) of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85) for the following commercial packaged boiler equipment classes: Small, gas, hot water; small, gas, steam, all except natural draft; small, gas, steam, natural draft; small, oil, hot water; small,

oil, steam; large, gas, steam, all except natural draft; large, gas, steam, natural draft; and large, oil, steam. On or after March 2, 2012, conduct the combustion efficiency test as given in Section 5.2 (Combustion Efficiency Test) of the HI BTS–2000, Rev 06.07 for the following commercial packaged boiler equipment classes: Large, gas-fired, hot water and large, oil-fired, hot water.

(iii) *Instruments and Apparatus:* (A) Follow the requirements for instruments and apparatus in sections 6 (Instruments) and 7 (Apparatus), of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85), with the exception of section 7.2.5 (flue connection for outdoor boilers) which is replaced with paragraph (c)(1)(iii)(B) of this section:

(B) *Flue Connection for Outdoor Boilers:* Consistent with the procedure specified in section 7.2.1 of HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85), the integral venting used in oil-fired and power gas outdoor boilers may be modified only to the extent necessary to permit the boiler’s connection to the test flue apparatus for testing.

(iv) *Test Conditions:* Use test conditions from Section 8.0 (excluding 8.6.2) of HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85) for combustion efficiency testing. Use all of the test conditions from Section 8.0 of HI BTS–2000, Rev 06.07 for thermal efficiency testing.

(2) *Test Measurements—(i) Non-Condensing Boilers:* (A) *Combustion Efficiency.* Measure for combustion efficiency according to sections 9.1 (excluding sections 9.1.1.2.3 and 9.1.2.2.3), 9.2 and 10.2 of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85).

(B) *Thermal Efficiency.* Measure for thermal efficiency according to sections 9.1 and 10.1 of the HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85).

(ii) *Procedure for the Measurement of Condensate for a Condensing Boiler.* For the combustion efficiency test, collect flue condensate as specified in Section 9.2.2 of HI BTS–2000, Rev 06.07 (incorporated by reference, see § 431.85). Measure the condensate from the flue gas under steady state operation for the 30 minute collection period during